

## A Variation in the Position of the Mental Foramen: A Case Report

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Received: 13 May 2010/Accepted: 13 September 2010/Published online: 30 October 2010  
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**Abstract** The most common position of mental foramen in the human mandible is apical to the second premolar. Literature reports that mental foramen lies either anterior to the first premolar or posterior to the first molar in only 1–2% of cases. A case with a rare variation in position of the mental foramen is presented here.

**Keywords** Mental foramen · Anatomic variation · Unusual position

### Introduction

Knowledge of location of foramen in the maxillofacial region is necessary especially in a clinical situation where regional nerve blocks are required for open as well as endoscopic surgical procedures in order to avoid injury to corresponding nerves [1]. A major challenge encountered during open reduction of mandibular fractures is the identification and protection of mental nerve. Prior to surgery knowledge of the exact location may enable effective mental block anaesthesia to be provided [2]. The most common position of mental foramen in the human mandible with respect to teeth appears to be below the second premolar regardless of race or age [3].

Knowledge of position of the mental foramen and the mandibular canal for various surgical procedures is

important. The canal is normally not visible on a panoramic radiograph. By tilting the patient's head 5° downward with reference to Frankfurts horizontal bar of the OPG machine, the mandibular canal can be visualized more clearly [4].

A case with an anatomic variation in position of the mental foramen is presented here.

### Case Report

A 20 year old male patient presented with left parasympysis and right high subcondylar fracture. Fracture line on buccal aspect extended from the distal side of mandibular central incisor to the mesial aspect of canine on left side. Fracture line on the lingual aspect, however, extended posteriorly up to the mesial aspect of the second premolar, running vertically downwards, thus making it a spiral fracture. It was also noted that the position of the mental foramen was unusual. It was found posteriorly, almost below the mesial root of the first molar (Fig. 1).

Preoperatively maxillomandibular fixation was done using archbars and elastics. Preanaesthetic fitness of the patient was obtained. Patient was taken under general anaesthesia for open reduction and internal fixation. Intraoral vestibular incision extending from right mandibular lateral incisor to left mandibular first premolar was taken. Mucoperosteal flap was raised to expose the fracture line. Further dissection was done posteriorly to confirm the position of mental nerve. It was confirmed that the mental foramen was below the first molar on left side which was unusual (Fig. 2). The fracture segments were reduced and occlusion achieved. Maxillomandibular fixation was done with wires. Fixation of fracture was

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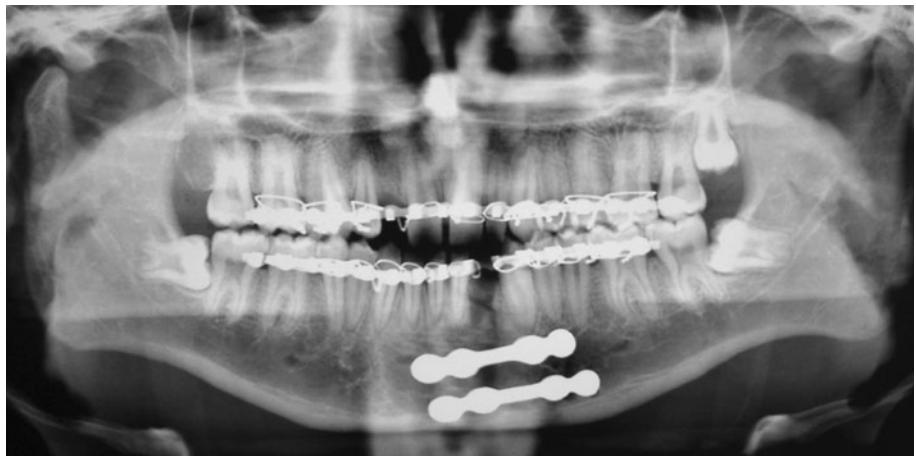
**Fig. 1** Preoperative orthopantomogram showing the mental foramen apical to the mesial root of first molar bilaterally (see arrows)



**Fig. 2** Surgical exposure of the anterior loop of mental nerve

done with two 2.5 mm four hole plates with gap (Fig. 3). Elastics were placed 24 h postoperatively to achieve reduction of the right sided high subcondylar fracture.

**Fig. 3** Postoperative orthopantomogram



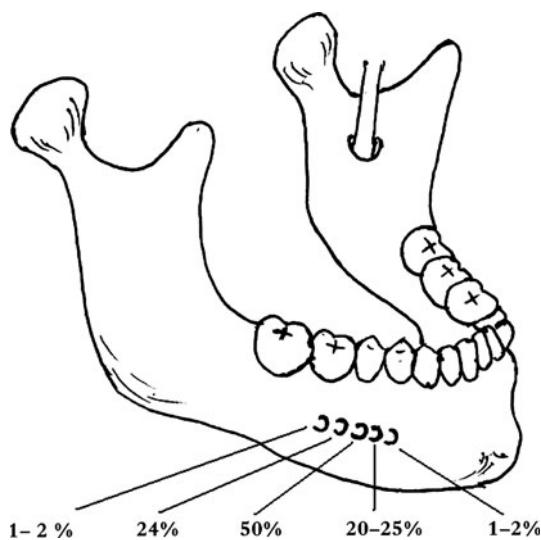
## Discussion

Mental nerve is a large branch of inferior alveolar nerve that runs through the body of the mandible to supply chin and mucosa of lower lip [5]. Mental foramen is usually found on the vertical line which is drawn downward from the supraorbital notch [5].

Repeated failures during injections and operative procedures involving mental foramen suggests the presence of local differences in some populations [2]. The authors reported an unusual presentation of the inferior alveolar nerve perforating the ramus of the mandible with a very short intra-bony course [6].

In regard to its relation to the teeth it lies about 50% of cases at the level of root of second premolar, between the two premolars in about 20–25% and posterior to second premolar in about 24%. In approximately 1–2% of cases the mental foramen lies either anterior to the first premolar or posterior to the first molar (Fig. 4) [7]. This unusual positioning of mental foramen made plating in the parasympysis region easier (Fig. 3).

Various studies conducted on different human races have shown the rarity of mental foramen being positioned in line with mandibular first molar. Various studies done on



**Fig. 4** Schematic representation of the variations in position of mental foramen

79 adult African mandibles [8], evaluation of 400 panoramic radiographs in Iranian population [9], and also a study of 400 panoramic radiographs in Turkish population [10] were not able to substantiate the presence of the mental foramen in line with the mandibular first molar. An evaluation of 161 panoramic radiographs in Malaysian population [11] pointed out that the incidence of this unusual position is 0.93%, which is extremely rare.

The importance of knowing the anatomical variation of vital structures benefits us in various ways. Not only does it help in salvaging the vital structures, but even in orthognathic surgeries these kinds of variations require modifications in placement of osteotomy cuts. Thus, it is important to know the normal anatomy along with variations and therefore, preoperative diagnosis of such variations will be of great help for treatment planning.

**Acknowledgments** We sincerely express gratitude towards the guidance and encouragement for preparing the manuscript by Prof. Dr. Ajit Bhagwat and Prof. Dr. Pushkar Waknis, Department of Oral and Maxillofacial Surgery, Dr. D. Y. Patil Dental College and Hospital, Pimpri, Pune-18.

**Conflict of interest** None

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